Notebook, N-08-02-13

This notebook contains dated entries from February 1908 and April-June 1919. There is also one note dated August 1922. All entries are by Edison. The book contains notes and drawings regarding various uses for electromotograph technology, including sound apparatus for motion pictures and sound amplification for phonographs and telephones. There are also entries relating to experiments with various electrical phenomena, including x-rays and "xyz rays." It is possible that the 1908 entries were transcribed by Edison in 1919 from another book. However, the book bears a physical resemblance to other books from 1907-1908, many of which were used by Edison in Fort Myers, Florida. Most likely, Edison stored this book at the Florida laboratory and began making new entries into it after he returned to experiments on the electromotograph and the chalk telephone in 1919 (see N-19-04-20.2 and N-19-04-23.2). The pages are unnumbered. Approximately 140 pages have been used.

May 20 1919

William H. Haney
... STATIONER ...
Good Work Promptly
68 William Street,
New York.

Em.9

Carb Sr moistened with Aluminate soda – K Li

Cylinder Oxalate Lithia, after friction by arc light + shutter, Try X ray + shutter + use cylinders Cupro cy K, Benzoic salts, ignited precipitated $CaWO_4$ Wolfrimite also do precipitated, fluoride Ca precipitd – Try Radium also, Mag + E, Radiations of X passing thru slide crystals, ditto light + magnetism intermitted thru crystals of slides Use for light the arc Try light + shutter on Reg Sr Carb + all the other cylinders – Use dif metals etc for pressure foot, + dif specds –

Get shutter mechanism from Kinetos at Phono Wks old one make so get 300 second.

Put Emg in secondary where primary is on a circuit where electrolytic action going on Use high speed.

To detect high frequency waves, fasten a pocket cented dia which gives light by friction among themselves also to use magnetic cus [illegible] useful Bismuth on dia & Sb pointed wire — galv on rotation waves to light to hear bowed gives heat & E detected by galv.

Transparent Cylinder

Light shines thru to pen thru shutter

Iron cylinder, helix, magnetizing pens with various metals, use all kinds

Cylinder of Metals & alloys & pens

Cylinder of glass & solid Bi dissem Bi chloride

Oxychloride Bismuth

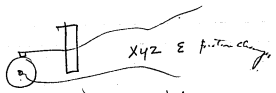
Oxide Bismuth

Black O & Cu by precip —

Sol of old Ether with Aluminum Reduces effects Emq

Carb Sr with Caustic Sr, this will absorb CO_2 + gradually fill pores make them finer + even dense
Denitrometer
This Carb Sr does when coarser pieces are used (12) $CaCO_3$ wet with Caustic
Alcohol =
After filled with Carb Sr try KOH, NaOH LiOH, K_2CO_3 Na_2CO_3 Aluminate Soda, K - Li -

Try polished aluminum Cylinder Coated heavy with Al_2O_3 by Current + dried -



Iron cylinder polished pressure jet non
rusting with all kind metals.
both cylinder & pressure jets
rotate high velocity also magnetic
etc

Use mercy cylinder & wet with
plating solutions, use only oxides
etc so plating sol has no action
on it try DC + AC induction Coils -
etc

Try Eng pen fused with very thin
non conductors like thin mica
mica can split use highly
polished metal cylinder
+ try all kinds of electrodes
+ sections of crystals that
can be got thin use coil
+ direct + XYZ -

also had permanent magnet near to pole piece both

from cylinder pen

permanently magnetized - Telephone working by polarization,

small circular tube to act as pen -

Use Bromide Lead for Emery Cylinder don't decompose with KOH or NaOH.

Wet cylinder Tellurite Potassium

Cylinder Cuprous Chl PbCl use other things than an alkali use neutral salts

~~Copper~~ Ferro & Ferricyanide Copper Zinc Lead Tin & all metals for Cylinder also all Cyanides that are stable -

Carb Sr

Try mixed RO H, Neutral
Salts all kind to wet,

Use Bragimals, CuS. pur + cyclus

Try all the Oxychlorides for
Cyclus

also stable precipt. acid sulphis

Try Orpiment Realgar -

Peroxide lead precipitated ditto Per Ox Mn
Mn_2O_3 precip Co_2O_3 -

Peroxide Ba Ca Sr -

Antimonate Soda

Arsenate Iron + antimonials
which must -

Vanadates of metals = Vanad NH4

Uranate Na K -

Tungstate Bismuth precipitated -

Stearate, Meerschaum -

Carb Lithia,

Iodide Cadmium -

Iodide Silver
Chl Ag
Br Ag
Sulphate,

Thallium Cylinder + pen -

Pens of Natural Conducting
Sulfides — Arsenides +
Fry Magnetite - Native
pyrometals - Red phos -
Phosphides, — Vanadium
Oxides Mosaic gold Sulfuret Tin

Res of Eng affected by Temp

Moisten Emg with KOH NaOH LiOH
containing metals heated on Sol by
Citric + Tartaric acids - also Oxalic

Try Acetone,

Insol Hg Salts,

Powder thru 180 mesh all
Kinds Crystals not development
moisten slightly press under
300 at + not Chem for Emg
both Ruby & hydrate
also Organic - & also inorganic
after all but last water
drawn off -

Flashing powers
Oxyfuel Mg ~~Zn~~ also
oxyfuel Zn
Sulfuric Compound
Dilute phosphoric + ZnOx.

Carb Sr + West with Hydrocarbon
& Organic Compounds –

West with Hg Cy also Hg Cy + K –
also other Double Cyanides Excess K.

West with Bichl Hg – ditto Silver Salts in
NHy – West with Sulphide K Na Li –
+ other Metallic Sulphides Salts K Na Li
Ammonium fricies K Li Na –

Also KOH Na OH. in which Chlorine
Br Iodine Chlorate perchlorate
all according oxide due to oxidation

Dally draw tube then as possible of
Lead Glass

same size as

Reg Eng Cylinder shove over a
metal Mandril with little Copper
amalgam to set + hold it
then use pen or it will act as
Condenser for high frequency

Ammonium Magnesium phosphate,

Eng Mandrils plated with all Refs metals that can be plated – also metals & Sulphurizes surface & either deeply ~~[illegible]~~ also Ja Se P. Iodine,

Where cant plate, put pieces of conducting substance against End of Chuck & cover or fill made out of conducting matter —

Where stuff is small use insulating Mandril + Extra pen

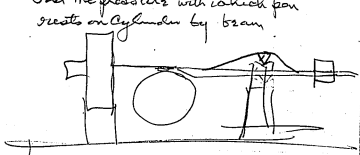
Use Cadmium –

Try Eng on California Cable –

Make accurate measurement
V + Amp - Limit of action +
other things

Cylinder Hydrical Tungstic acid
Silicii. Telenuclaphosphatic Na
K amorphous arsenious acid

Test the pressure with which pan
rests on Cylinder by beam



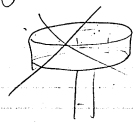
Turning until sound Ceases

Paint back of pan with various Colloids or other matter finely divided - organic materials fine precipitate -

Insert cylinder Sintered Well Charge pressure take the resultant in pores (10) Ferrous Cu Ferrous plus Silica hydrate, Chromic Etc -

Put wire on flag pole & run down to lock on pole -

Try Energy on Chelsea Cable



Try dup Coils high & low Volt
Try very low 1 loop around
non 1 loop ~~[illegible]~~ Secondary

See – Aluminum from NaOH, prepared as phosphate – R T Thomson
Chem News 54 pages 252–253 –
Chem Soc Jnl 1887 – p 182–183

Test for Al_2O_3 in NaOH, by Mellingtonangs – Chem News 55 289 – Chem Soc Jnl 865 1887 –

Sol containing Na2O & Al2O3 (as oxides) with Indicator as Sacons of [illegible] Methyl Then Ferroacyl K Indicator down till the indicator turns red of Al2O3 – 4/100 ccs of gram Mon electrolyte.)
Zeit, and Chem 25 519 –
Chem Soc J 1887 183 –

~~KOH or NaOH containing an acknowledged phosphate, yields an alu~~

Catalytic

NaOH, + formaldehyde —
gives vomiting any qnts of Cu Ox
put in violent production Aqua regia
or fused hot alk Formate Na
~~qnts~~ produced —

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good — Chlorids desired in
15 parts amyl alcohol —
KCl - 24000 pts + NaCl 30000
parts,
amyl alc added to mixed chlorids (concentrated)
mix heated gently at first until
water driven off then raised to
boiling temp of brine — K + Na Cl
are precipitated LiCl passes in solution
liquid now allowed to cool
few drops HCl to convert any
LiOH into LiCl then the solid
again to drive off H_2O —
F A Gooch Chem News 55 p 18 to 79
J. C. S. Soc 1887 528 529

H_2S precip Al_2O_3 in cold from alkali
Soc Chem Jnl 1879 p 437

Milk of lime throws down Al_2O_3 hydrate
from Na or K aluminate –
~~Unsigned Essay~~ –
Jnl Chem Soc 1879 490 –

Protosulphate from dis a crystalizing
from Boiling sulphuric acid

Will KOH solid dissolve an
alcoholic solution with
ammonia precipitate
the Al_2O_3 out –

Try on KOH, little silicate Na 4 parts
H_2S to form ultramarine
Does throw down Al_2O_3

For obtaining Very large Crystals
Chem Soc Jnl 1879 352

Lead Iodate is far more insol
than Lead Sulphate - try Iodate
in our KOH & NaOH sec of
prep also after boiling out
Reg of Hlx in KOH, also
on new Sol after 1st Run after prep

Lum Oil, ~~Fixed~~ to 175
some Iodell K wash
N°2 prepn to wash well
4 Marks prep

Equal Vol of Ether + Alcohol
dis Li Chloride not other Alkali
Chlorides —

Distilled H_2O has lots NH_4

to get it free of NH_4

See Chem Soc J 1879 878

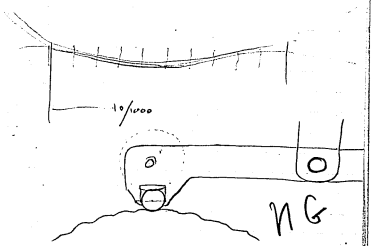
Feby 13 1908

Kinelo-film Mfg to keep gelatin film stuck to Collodion - dissolve some Lithium Chloride in the amyl acetate dope - Not K Chloride are practically unsol. in Sol 15 pts amyl alcohol - This is hygroscopic & will cause gelatin to stick -

Also work up in the dope 10 or 15% of finest gelatin then on drying Collodion film will have Microscopic mixed with it finely divided particles of gelatin & when the Reg gelatin film is poured on it will stick to the gelatin particles which happen to be on the surface of the film & as these are dissolved by the Collodion it will fasten the film firmly

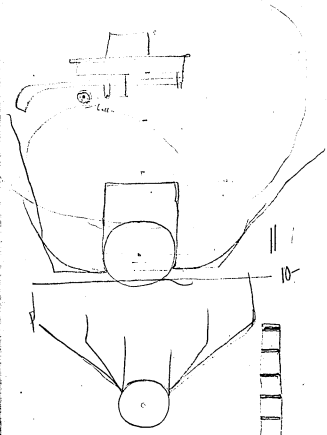
To strengthen the film add to the dope semi-nitrated Cotton so that there will be long ~~[illegible]~~ fibres —

Phano Repsr Feby 13 1908



Revolving bell repeat
Walke line of most frequent

Pass powerful Current thru
Metallic Uranium see if increase
radiation, with Uranium Salts
(Crystals) dielectric streams also
Powerful Mag — photo of Electroscope



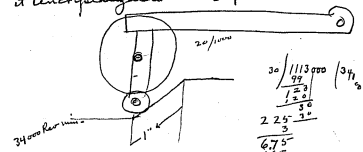
6' 1113 inches

30 | 1000 | 33.
90
100

165
33
495
495
5445

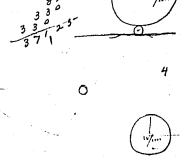
Feby 13 1908

Sebacic acid in Mountain wax is the higher acid of the oxalic group — it used to mix with Stearic acid to render it unexplainable — try it —



30 | 1113000 | 37 1/30
90
123
120
30
225 30
3
675
165
3375
4050
675
1113 75

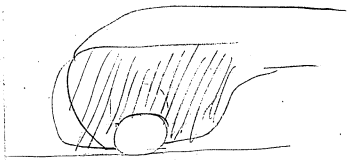
165
2
165
225
825
330
330
371 25



40

4 $\frac{1}{5}$ th the friction —

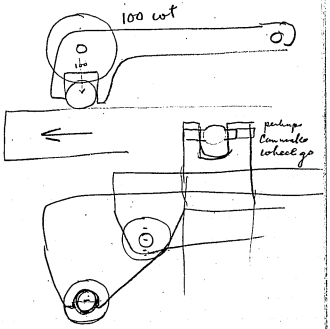
Think that the Benzine sol part of Bull S from Oil Tanks will make almost any wax unexplainable & longer it



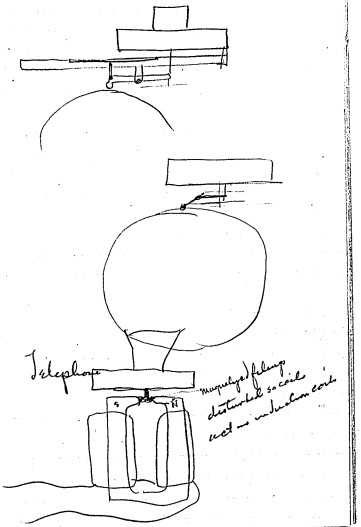
Possibly Know way
but doubtful

Feby 13 1908

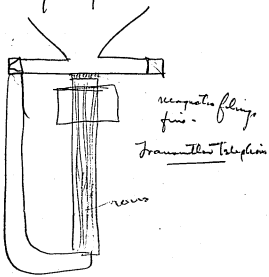
on 200 thread Screw & 10/1000 ball
if rolling will make 30 000 Rev min
500 Rev second, =



Feby 13 1908—


Telephone
S
N
magnetized filings
distributed so coils
rest in induction coils

Feby 13 1904



Feby 14 1908

Kentile film to make gelatin stick to flow the Collodion film. Have when dry wash with a powerful reducer such as that by Sulphite. Only made to remove NO₂ only a little on surface & bring it back to Cellulose. Wash free & dry then flow over the Emulsion. It will stick OK —

April 18 1919

Notes from old pocket Memo book

Nitronaphthalene with excess of Shellac Melted + poured out on plate shows signs of Nitro Crystalizing after several hours + after 24 hours at ordinary temperature wholly Crystalized + the Shellac mx is now very hard, if flock was incorporated it could be moulded into Combs, Billiards etc = it fills the O from NO but does something Nitrophenol — Wachow Camp as it burns clearing also

See if any ray comes from a X Ray tube that is exhausted so high nothing goes thru no X

Perhaps Carbon, Tantalum, Osmium Tungsten Lamps at high incandescence give a ray other than heat + light.

April 18 1917

Intensify suspected source of ray by a shutter allowing the ray to strike two very sensitive diaphragms with securing tubes — Diaphragm plain or have crystals attached, Try Radium, Thesslhorm X ray

Acetylide of Copper in Lebiquide,

Form Tungstate Calcium by fusing the precipitated salt in salt and when its cooled to a point where the crystals are all formed quench it suddenly This will put an extra strain in crystals & be more sensitive to X ray

Mr Bon says sulphide of Zinc very sensitive to Ultra Red, will photo beyond visible red 1/30th of second its green —

Shellac treated with Borax then washed well. Then treated with acetic acid a little — washed & dried it now no longer dissolves in Stearic acid or Naphthalene, although 85% of original Shellac is the result. Why is this ??

Tetrachloronaphthalene can be entirely decomposed by boiling a long time in water to HCl & a Resin — ??

Aldehyde dissolves Cyanamide the mix after 24 hours changes to a body resembling Copal soluble Alcohol, see Watts 2nd Sup.
Cyanamide is now cheap try it.

Subject Uranium salts to X ray & Unity see if radiation increased

Hydrochloride of Phenylhydrazine sublimes in lead pt. Make reduce metals, flake for battery.

Strong KOH saturated with lead oxide on cooling gives scales Chloride Ni should be reduced to oxide Ni + PbCl. then OxNi reduced in hydrogen for flake for battery.

Dioxide of Molybdenum Crystal Conduct Elec not affected by boiling KOH. Watts 1st Sup

OVER

p 832

Watts 1st Sup MoO_2 fuse Molybdic in porcelain Crucible 1/3 wt of Zinc add small portions at a time heat till Crystals spread out from Zinc & fill whole liquid. Cool off & digest alternately with KOH & HCl wash with water.

Dark blue violet possess strong metallic lustre. Conducts Electricity well not attacked by boiling KOH or HCl

Chemicals insoluble in Alkalis

Cupric Antimoniate $Cu(SbO_3)_2$
Mercuric "
Lead Arsenite $Pb(AsO_2)_2 \times H_2O$
Silver " Ag_3AsO_3
Boron Nitride
Lead Chromite $PbCr_2O_4$
Magnesia "
Zinc "
Ca "
Iridium Trichl $IrCl_3$ anhy
Lanthanum Hydroxide

Molybdenum sesquihydroxide $Mo_2O_6H_6$
" Mo_2O_3 also Mo_3O_{12}
also MoO_2

Molybdate Mg $Mg_2Mo_3O_9 = 2\,MgO\,3\,MoO_2$

Potassium Sodium Columbate
Columbium $Di\,OX$ Cb_2O_2
Platinous Cy
Ag Cn
Didymium Hydrox
Erbium "
K ferrite
Ammonium Ferro-hipo sulphide
Calcium Ferrite
Mercuric Iodate
Mercuriammonium Nitrate $2NH_3\,2\,HgO$
$N_2O_5 = NH_2\,HgNO_3 + \frac{1}{2}\,H_2O$
Ba Ca Mn ferrites
Di Mercuriammonium Carbonate
" Chloride
" + Mercuric Chloride
Cuprous Sulphacenate
Mercuric Sulphide

Anthraquinone insol in KOH, hot.
not oxidized by mixture
Emeraldine from oxidation of Aniline
with HCl & KChlorate, is insol in
KOH

Phosphate Alumina not
Decomp by boiling alkalies
EMCP

Apatite, fluorite, etc. phosphoresce by
heat. Try using them as Diaskeuastic
Keep them charged electrically
When not to see if they work
Continuous phosphorescing permanently
also chg + dis vibs –

When excess of Lime water added
to platinic Chloride + exposed
to light, a white or yellowish
precip is thrown down

X42 globule CS_2 suspended in a diaelectric subject to Magnetic ~~stress~~ & Electric stresses + amplified by 30 ft perspection on screen, result movements are given by Ultrasonic stresses or Constant stresses + beams of light X42 + X ray

Sun Engine CS_2 two glass tubes inner filled CS_2 blackened walls - outer tube Invoer, Vacuum between a la Thermos bottle CS_2 Vapor to drive turbine - CS_2 could have taken in it asphalt!

Method of preparing large regular Crystals.

Sol of salt from which crystals desired so concentrated that some Crystl out in 24 hours - A well formed Crystl is picked out & laid on a plate glass which again is placed in

A glass dish, upon this is poured the mother liquor to which a small quantity of fresh salt has been added. Alcohol left to cool in a place of room temp.

This treatment is repeated every 12–14 hours until crystal is of desired size.

Sol should not be too conc as crystal is liable to grow irregularly if this happens it must be turned over on the plate & small adherent irregularities removed by regulating the position of the crystal definite faces can be made to increase. By this process got Chromalum by weighing 3 lbs

Chem Soc Jnl Abstrad 1879 352

Apl 28 1919

Try hardening of Carb Stroulen Cylinders of EWQ by soaking in $Sr CO_3$ water and drying or perhaps better soak in Sr Hydrox Sol^n let it dry in CO_2 gas - This will fill pores to limit a few more than more pressures if OK see how far can go -

Perilla Oil polymerizes like Chinese Wood Oil ∴ C W oil cost 8 cents before the war now 18 to 20 ¢

Starch, Dextrose, Levulose are Aldehydic Carbohydrates + will act as a substitute for Hexamethylenetetramine

Names for Musical Instruments

Harmonola
Melodophone
Apollino (quick)
Concerto
Concertola
Concertofo
Cantate
Cantatola
Cantola
Autophone
Audiophone
Bandofo
Cremona
Bellcantola
Cantonello
Chantor
Choraleon
Concertina
Consonanza
Dulcina
Eccola
Donatola
Impirator
Legattola

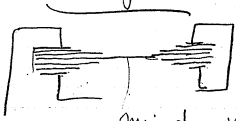
Cantophone
Lederphone
Lyrophone
Melodola
Symphonola
Tondola
Musicola
Pandola
Orchestron
Sonola
Sonophone
Troubadour

Apl 28 1919

Al_2O_3 Hydroxide sol in Caustic Barium
(its used in tests) it is also
sol in Ethylamine

To test this try a small Al
Rectifier if it prevents rectification
its OK for regenerating Battery

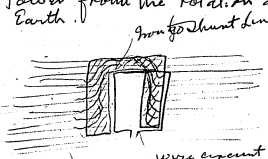
A glass tube 3" surrounded
with sand is perfect gives
no echoes - tried it it's OK.
Sand surrounded funnel
should be good.

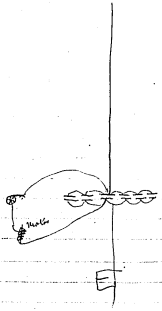


Mica disc very
sensitive but dont give big amplitude

April 28 1919

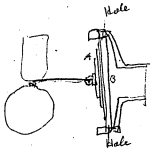
Power from the rotation of the Earth.





1. Sandr

Resin from Canada Balsam & also gum Sandarach not soluble in alkalis



Eng - Double dolphin A & B

The holes at edge prevents sucking of one dia by the other as friction movements of lever is slow

Carbamide destroys passivity of Nickel in KOH

K & Na precipitated quantatively from alkali solutions by Hydrofluorosilicic acid which has absolutely no action on alkali salts.

EMG

Try the old 4" dia stiffening in Center sec of Bender than small one now used —

Should try a clockwork drive & also a monomotor Electric Drive for EMG

Fill an A4 Cell (B 4 well dia) full of Magnesia MgO ignited about 180 mesh on 150 but its running This has never been done properly but may show up some phenomenon favorable especially with Bi

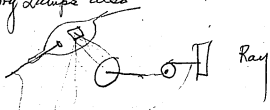
After an EMG Cylinder has been pickled & get sensitive Oil the whole with Straw Oil & see how it works This should prevent water Evaporating

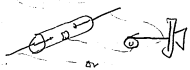
EMG try NaOH + KOH with other salts dissolved therein by Sadamido

Rotating Vac Tubes

Emg – def lines under point of pen rotating on glass,

Dry Lamps also





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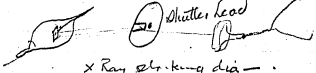
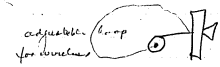


X Ray stroking dia –
or a Carb microphone dia & Carbon –

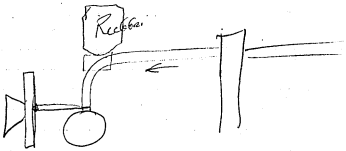
All kinds stunts



Crystal Crystal undergoing should give off energy - a ray etc try attempts with this because if conditions are OK especially if crystal is in a dielectric you conditioning DC something besides heat must be evolved

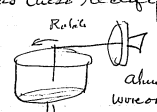
Possibly to get quick results many salts some complex 'Gases put in at once

Also should be energy as a ray etc from precipitations,



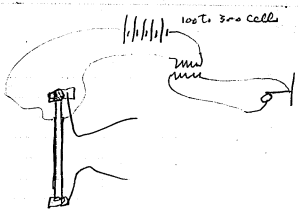
Wooos condensation & manufacture comes over wire should change friction on Chalk & glass conductivity

See what can be done with EMG as a transmitter disturbing the polarization current standing & also running using Bell & EMG for receiver also of solutions & also Aluminum & Tantalum points in these rectify more

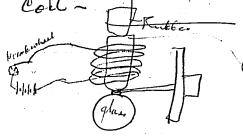


Aluminum or Tantalum wires or sheet, & phosphorus etc

Alternating currents see of 924 & 925



two Drafts 1/32 apart lengthwise tin foil on outside / Earth - vibs vary the capacity try to ewg direct also without coil -

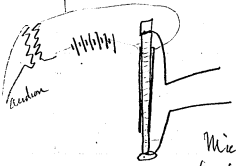


increase & decrease friction by squeezing also try alternating currents by using coil - metals & organic things

glass plate, change plate, when comes around
EMG displays effect + gives kick by allowing
precision - Tiny Ultra V. Radium, X
Etc, Shullers

powerful current
drive the K ion thru the
dia into the phenolphthalein indicator

K very thin Ni or Silver,



Mica dia - 1m foil
such acids —

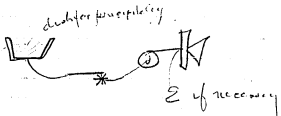
Vibrations of dia ~~of~~ Mica, deflects
charge

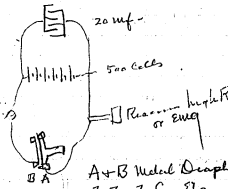
When wave comes
+ no self induction
at Chalk

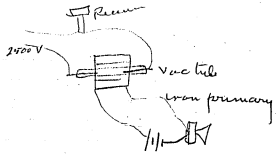
Current opens when pen anode
+ lets Current flow to X

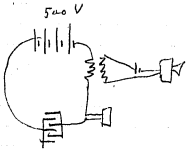
For screens holding Crystals so rays
experimented on need not go thru
anything use Sheetch silk
Bolting cloth 20 mesh —
Sift the Crystals + put on by
Varnish. Do some parts of Crystal
has no Coating on to deflect the
ray These for experiments with
XY Radium X, Uran & C

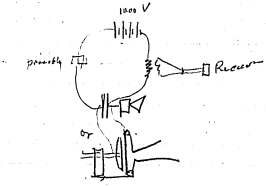
Determine Constants of Cast
Emg — Res still Res
running — Best pressure in oz
pull on diaphram at this pressure
Nature of the Current Coming
from it stepped + relating
+ all the Constants —
Also if it is current or
~~Elec~~ Voltages needed

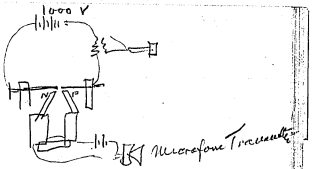


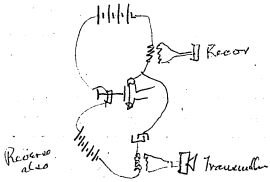



Receiver
2400 V
Vac tube
from primary


500 V


1000 V
primary
Receiver





Possibly examples of Mica
David Fulton glass cellulose
& others. Crystals also crystals
that give voltage by pressure
also Zinc Sulfide discs (PE)
electric ceramics.
Cut from crystal & place dessus &
put by metals on each side & tap
to get current until glass one (pour)
through a plate electric current

See if ~~pulling~~ right kind of impurity in Tungstate Cadmium fluorescence can be increased

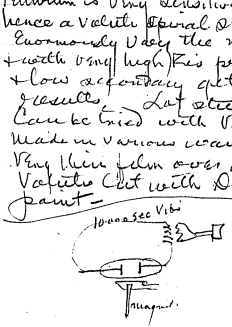
Investigate the Clay smell

Run down the friction of paper over ~~tin~~ Tin when platina passed over. John Ott made a wheel with dif metals find it.

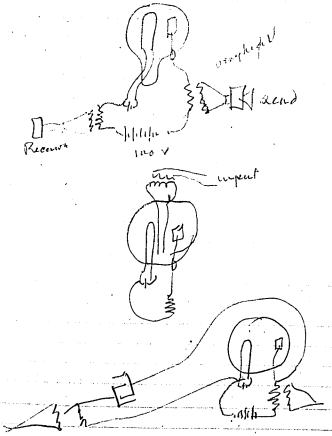
Find the XYZ apparatus John Ott made,

Use hard rubber decahedron paint a volute spiral on face with Tellurium, Bismuth, Selenium, Barium, graphite etc Current heats, The disc will create cold & heat & vary res - with Carbon it will vary contrals

Tellurium is very sensitive to heat
hence a valuable special should
enormously vary the resistance —
+ with very high Res primary
+ low secondary get good
results — Lat attempts
Can be tried with valves
Made in various way — possibly
very thin film over glass
Valves cut with Diamond
point —



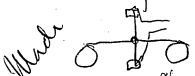
It may be absorption of OH + H in palladium or Ni or Zinc may be an important factor



See if charged substance held near Audion bulb affects it
Ditto magnets + how much

See if current in audion when no battery on. If no Elec there must be something + to XYZ test for it
Some chance for stands here with Crystals + XYZ Rectifiers

Make Emg with 2 chalks
1 Dia

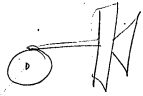


Try in series + multiple –

If a chalk gives a current which 1 chalk against the other to spark or double it

Test absolutely on box with variable currents flowing or no current also with + without condensers

When got good chalk working to most accurate point on box see if any of the lines would increase by raising Voltage gradually –



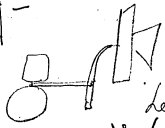
Magnesium cylinder oxidized slightly so short conducted metallically & tested with KOH,

ditto Aluminum Zinc Cadmium. Tin & other oxidized metals

Also tried by Electrolysis

Lead Mg Ele

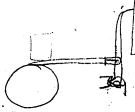
Emq –



leverage on Emq

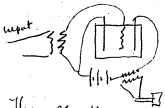
Made
Aug 15
1922

Make more sensitive diaphrms for Emq by stiffening Center with Aluminum Cups so only the Edge flexes (16) 1/16 alup 1/32 – but use rubber rings



leverage

If con theory right. this

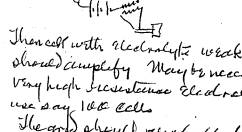


Then cell with electrolyte weak or strong should amplify. May be necessary to have very high resistance electrolyte so can use say 100 cells.

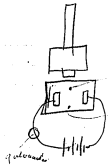
The grid should probably be a substance quite different from P so must off

Current go on P + not on grid

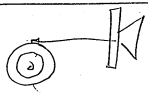
of aluminum + P of ——?



a Deposit iron on a or b from solution, use permanent magnet

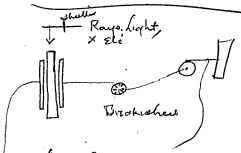


Hg - pivoted lever to accurately balance



Mica 0.001 thick

Put coherer of high dielectric
Capacity but conducting —
pass alternating current high
Voltage through it and Cohere
Now insert a rectifier in this
allow 1 way electrifetn of it
Coherers



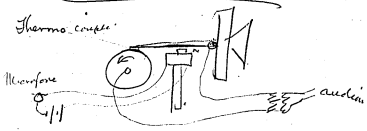
also Crystals.

Try sides of Chalk mounted of Emg
of different metals, not same
Solutions, want get chalk to rectify

Continue Expmts with lif salt
than alkalis

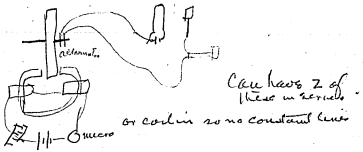
Also make cylinder of solid fused silicate soda work not hygroscopic, various proportions.

Mix silicate soda sol with various powders say $SrCO_3$ chalk etc



Have magnet vary pressure on cylinder to increase or diminish thermo current rotate at rather high speed + have very light pressure on levers so only magnetic pull – Really no need of Graphite, as audion used

try Tellurium + test thermos –



The trouble here will be to create a field without having any lines when micro not working –

Conceal Tin wire if it can be smelted also Iron Mica, Run down the, lessening of friction on paper lead over tin when platina spatula rubbed over, There is some emanation from Tin, Think John Ott made a wheel with several metals on face to try this, connect to diaphragm wire if get a knock when rubbing

(Probably Chilled Tin not crystalized)
will give ray better than Tin already
Crystals ray may be due to
gradually Crystallization,

Sulphur may do the same
thing. — Could try various
things, due to S Crystalizing
Could pour it between plates
+ connect them with various
instruments also without
plates test for a ray —
Sulphur will be a fine material
for this kind of experimenting

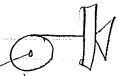
Also Liquids crystalizing.
Could use depositing solutions
like Z Anode & Cathode in
Conc sulphate Zinc Nit
+ nitr Solends etc on
Crystalizing — using various
detecting instruments —
photo plate —

Try Chilled Zinc + Chilled Tin
then black paper, Mica & our
Shale plate Reg & for Red long
time exp of pulse.

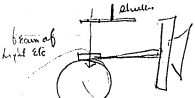
Try Audion & try effect of
rays from dif substances
studying the air space also
grids with 256 second shutter
see if Electrons affected

Use Edison effect see if
Current affected by rays Ele
also magnet, Crystalizing of
Sulphur,

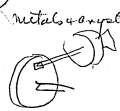
Try packfull of 50 mesh
Ox Magnesia see if holds
charge better if it does try it
in a Bismuth N. OH. CaCl



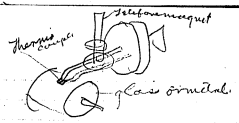
high speed – Coat with good dielectric varnish thin. with some pressure on pen see if current & XYZ effects it thru shutters –



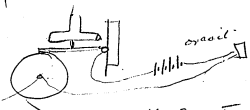
Transparent metals



Uranine may give out a ray



Pressure put on just so overbalances pull of magnet, Cylinder rotated high speed.



high speed, get smoothed metals etc that will make the magnet control — Very constant with voice, see if articulation OK —

Aluminum Plate 1 x 2 put in Rectifier solution & formed for 1 or 2 minutes, both sides do several. Then wash well & dry then graphitize - then plate, Copper or Nickel over graphite. Wash dry here iron will poly have a rectifying Condenser in air

Try input into 3 stage without input coil Microform direct + use no magnets, see if amplify

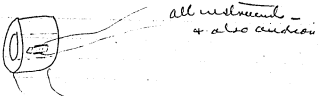
Old Etheric - Use big break wheel a Coarse wire spool, the dark box & zinc rod also try fact on glass rod + get old sparks. After getting original results, adjust lamp wire and dark box, use an earth after getting spark put in phone, if nothing use bulb

For other rectifier if get nothing use EMG + rectifier + settle what it is –

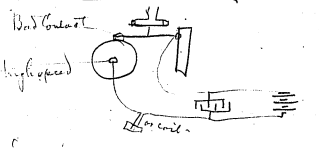
Try pour shellac between plates containing tetrachloroanthracene Dinitrobenzol Naphthalene slow & fast crystalizing & see if nitrite comes from them or current or electrofication

Also melted anhydrous salts poured on plates

$AgNO_3$	MP	217 Cent
$HgBr_2$	"	242
$HgCl_2$		293
$LiNO_3$		267
$SbCl_3$		292
$NaClO_3$		302
$NaNO_3$		316
KNO_3		339
Na Nitrite.		



powerful alternating Currents
Crystal with Electrodes, also – 2 metals together –



Best stuff for make Cu O plates is Iron Oxide (Ferric)

Flatten Crystals 1/32 thick 1/16 wide – place between 2 flattened points in double room spark coil current then also straight current 300 cells – see if fluorescence –

See if helix or electrofication of a Cathodray tube effects heights

One foot long iron wire inside a helix – one end fastened solid the other end touching a microfon diaphram and interrupted + also alternating currents + listen in audition also try other metals,

Investigate rapid appearance of heat in long aluminum bar heated + suddenly quenched

Try Bone black in Emery –

If Can get a telephone soft iron magnet core to work can make the magnetic amplifier work try –

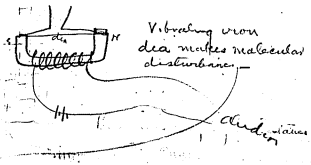
Make a Condenser like we had on jumbo machine, since our fuse & lock Multiple arc Storage but to get 1200 to 1500 amperes + alternate to see if can get the 1/4" spark – possibly it might take place of pulsing Coils

Open up a W Elec Condenser and have to make.

Patent Arsenic Soda for stripping from Copper

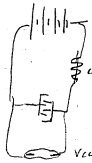
Try slaked lime for Eucg Cylinder
it can have to precipitated out by
alcohol —

See if we have checks of
Cadmium Hydrox
Ni Ox (not hydrox)
Mercuric & cus oxide
Bi Ox
Ignited aluminum Oxide.



This should show if any part of
Bell-phone results are due
to Molecular changes —
idea soft iron & no battery

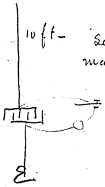
several hundred cells

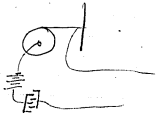


Buy that special book on Drying Oils —

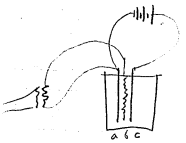
See Watts Dic Linseed oil —
1 pt Linseed oil 2 pts Concd Nitric A 4 pts water.
heated, swells up, gives nitrous fumes & dries to tough Elastic Resin, gives other methods,

Phosphorescency non conducting
imbalance between metal plates
see action of light - if current
or electrification,

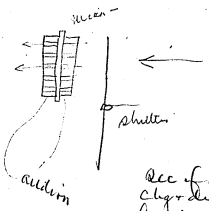




Will the two cells strengthen Reg
Emag talking



a+c plates very close together in non electrolyte — also for a very poor electrolyte. b to a plate grid, see if any compli

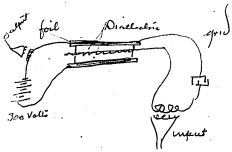


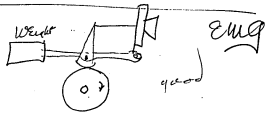
see if light affects charge density
Condenser

for speaking pictures, use phones
for recording & replay - all connected
to shaft of phonograph so no
synchronism required, use carbon
or Emq amplification -

Make time tests with limits
read on box of East Emq
Closed in box with sponge
while running & also
not running see how long
it lasts - & fall of reversibility

Get lot of Silicates used in alkali
by double decomp for Emq
cylinders -



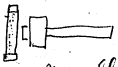


See if good cupric ammonium solution that dissolves cellulose will dissolve fully condensed formaldehyde.

May 22 1919
Entered from last book

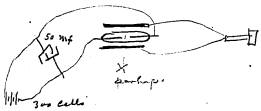
Collect all the xyz apparatus made by John Ott

If there is a double sulphate of Iron + Magnesia or Oxalate etc Ignite to Oxides reduce by Hydrogen + test in alkaline Smalt cells. The idea is to prevent shrinking — also try mixing of salts to get different proportions of magnesia.



Microphone carbon granules of which 1/4 is from 3/4 Carbon see if sensitive

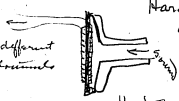
Try Jubalong, Pontiac mixed with Rosin instead of linseed oil for powder to mould disc blank



I got the several hundred alloy ingots I have for different things —

listening device on ships provided with Trompe like Marie leading Iron tube to any Trompe & memory index — to detect slow waves like Screw or displacement waves

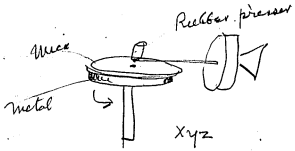
diaphr
Wire 3 Mf Condenser
in closed space
Listen when current
ac —



Hard rubber diaphrm
armored & each
side with foil.

Hard Rubber Very Thin —

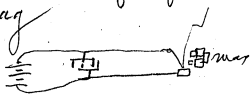
Fill a small test cell with
MgO - ~~on~~ 5 then 50 on 100, ~~to~~ see
how the V & Capacity is —
If OK try large Bismuth in NaOH's
Cell —



Rig up an Acoustion with gasoline + see how sensitive.

See if fluted light in Vac tube is sensitive to influences

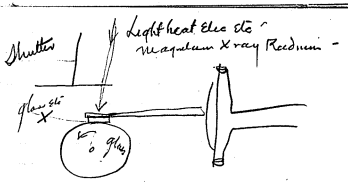
Make the sparks from different Metals + see if deflected by Mag



X ray also Radium particles
hit end of long steel wire
to transmit a Conversion-
detected at other end say ?

Look up Ether in 1873, 4, 5 –
+ see if in Electric, scientific
London Engineering + English +
Especially Scientific American
+ see where S P Thompson got
his information from in his
paper in Philosophical
Mag

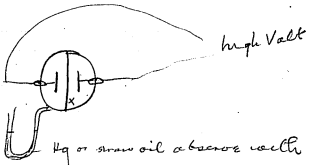
Condensed steam with
Excess of 6/4 + Especially
Para at the Lowest
possible temp to get rubbery
stage + then find a Solvent
for use as Varnish
Try 110 Volts long time,



Shines through glass, Mica, & Crystals, & alters frequency the shutter giving vibrations heard in the phone -

Also instead of glass Mica etc at X try metals & X ray & other sources of Energy Controlled by the shutter -

See if Energy is more sensitive to waves in form of high or low voltage. Use Bell Receiver instead into the various Bunnell Coils high low Secondaries - Measure on box



Microscope — CO_2 gas — absorbs
Osmos in gas thru porous diaphragm
X also diff gases exch and de

The Ether is atoms vibrating at all periods from say 80 to 180000 miles second —
These vibs give no light or other Evidence Except when they proceed from or strike matter Li gives when struck gives its rate K another rate — This in its turn sends into the Ether a preponderant lot of vibrations at the Li rate,
+K at K rate.

Use Mica diaphragm to which is fastened different sections of Metal Compounds absorbing light heat etc + pass monochromatic - with a revolving shutter say Na light beam used then use best substance to absorb Na rate - This should vibrate diaphragm Na would be best - find substance lets all rays thru This should be in resonance - If in audible use Micro, Acoustron, Thermo, Audion Even a water phone a la Submarine having Chemicals that absorb the Na rate using Micro + Audion

Diaphragm of 2 diadectics highest + lowest capacity with thin foil armor Connected to incoming waves impressing a current on 1 armor to Earth other to Voltage the highest capacity diadectric

Expands the most this bends the diaphragm also no armor + Rayo[illegible] with shutter with or without Audion-+ microfon

As pure iron in Bell telephone requires an initial energy before any attraction is shown but ok when its magnetized hence for very weak current a closed ring permanently Magnetized should be more sensitive for weak currents or a battery inserted + CP iron used in ring.

It seems to me the input + output leads of audions should be permanently Magnetized

Lithium Potassium Salts of feeble acid oxides that are insoluble in alkali

BiO_3 – LiK

CO_2 – LiK

UO_3 LiK

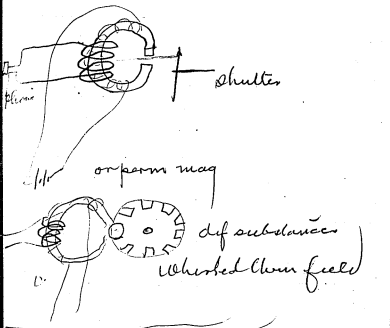
NiO_2 – LiK

Potters Na Salts –

EMG did I make Carb Li

Beryllium Ox – do Carb B

Carb Hg $Hg(OH)_2$


shutter
or perm mag
dif subdances
Whirled Chem field
double power
Emg
wound
Uniform

When listening to a water phone sink a small rubber balloon near it & blow it up see if it diminishes Volume

If I can get chemical paper sensitive enough could with 5 Tunings & Auchors to Each - form Roman letters like old automatic & get high speed recording

for chemical recording use plaster paris cylinder on Reg # 30 machine -

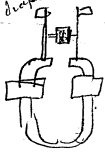
June 3rd 1919

See if a photograph plate moistened with a conducting solution P + Neg pens made by side will leave a record on passing Current in dark — Dry plate —

See if an oscillating system Condr made 20 000 to 1 Million sec if so try Crystals in dark.

Use a Emg chalk soak slightly in Oil or liquids insol in water when dry then wet with KOH in Eng way + see if Pot results — possibly results gen Pos close to Neg + high Res also try high Voltage + many liquids Mod Condrs + strong Currents + see if works without KOH.

Wet Emq chalk with KOH.
Coalaming colloids like ferric
Silica Alumina gelatin
Albumen Caramel gambooge
See if improves scintillances
of Reg Chalks



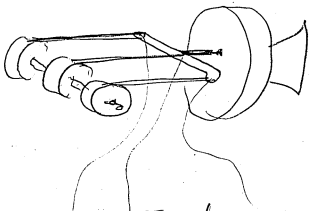
Magnetic Microfone

Try Aluminum pow +
phos soda or other quad
Hectifying Sol

See if Emq has a rectifying
action Especially if Manduck is
Aluminum factor phos Na used

Between poles of an alternating current mag - poles powerful in dark room, (City Current) place Crystal see if get light. The X ray bounds of Crystals 600 cell Electrification,

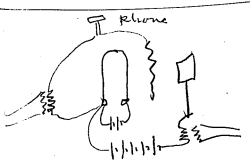
also shaft + plate from Condr Edge between poles + crystals def kinds at Edge + rapid rotation

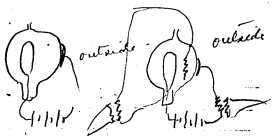


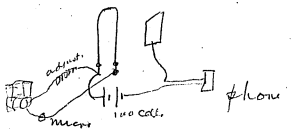
3 Micro 3 water phones

3 Emg

Magnetic Metals unlike all other Metals, Combine iron with Bismuth, Energize the Combination in various ways & see if get a ray or X

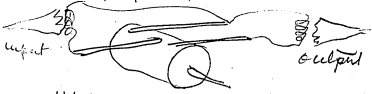


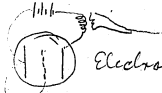




Bring to high temp & then let phone hang still higher at point where most acoustic to light also where Res of film comes down most,

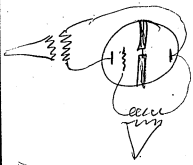
amplifying by Emq



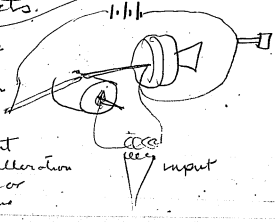


Electrolytes

Osmotic Decaplin



Bell Magnetophone or
Liquid in granule box
Microfone with 2 or 3
stage audion for heart
beats.



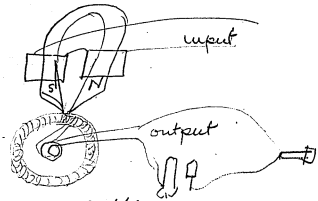
Reiger fast
spark
photomagnetism
in Bismuth
track
Ideas to that
surface alteration
permanently for
short time

Test sensitiveness of Emq
by heat & cold,

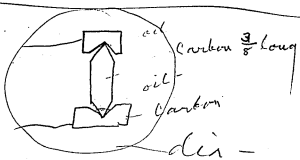
Secret wireless, using
Very high rate Vibs & detecting
by Emq which has no lag
or inductance -

Prism cut from all kinds
Crystals Carbonds, ammonia
iodide, & rare earths -

Long Thermo Couple, all kinds
metals, junctions & ends -
hit by X. Ray Cathode
ray Radium Etc. . -



Magnetic ~~rectifier~~ amplifier with Edison Valve in Ckt

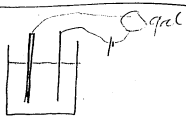


Set on Rubber sponge

Perhaps an acousticon with
gaudens around the balloon
using a disc like Amen Bell
with adjustable resonator
should get the natural
notes of the propeller
blades & amplify by
Eng or Audion

Use Eng with Aluminum
Cylinder cut in Phosphoric Soda
& get film on thin
use as Eng Chalk

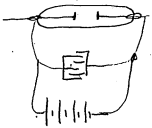
Try a Magnesium metal
Cylinder. — Dry oxidize the
surface & use KCH for
Emg. This should work



with & without battery — Liquids
Crystalizing
also interrupter of current &
cadion — Zinc & Ni &
other Metals as poles,

bare wire solid non condu melted
+ Cast around wire see if a
Kick in Anchor, or gold

Vac Tube



This should oscillate if vac
right shape, or Condor adjusted

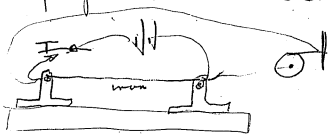
Lead Battery

Non shrinking pelets

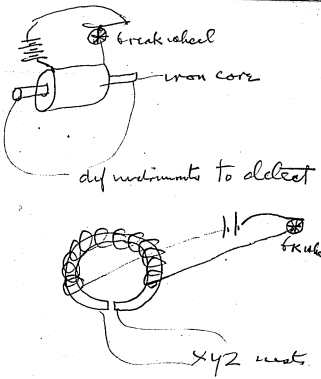
P – Silica hydrox + lead salt
Ba Sulfate,

Also Ba Sulfate pressed then
impregnated with lead by
precipitation, then Reduced to
Metal,

Burnt very porous clay
impregnated with Lead salt



go higher in heating wire
than fusk point & let it
cool & see if heat anything
at fusk point – also spool
wire around it



Try magnet on phosphorescent
dessing

A detecting instrument
Use phosphorescent disc
Then turn a slit like a
spectroscope let def rays
pass thru & see if accelerates
dying out at slit image -

Should use silk diaphrms
20 mesh & secures various
phos & fluoresc crystals on
for tests -

Could make slag wool
of melted MgO ZrO etc
by Electric arc which
would be useful for
something.

Fused Li Tungstate should be better fluorescer for X ray than Calcium Tungstate

---

Another detecting instrument Spark coil with points on verge of sparking – ray strikes point & spark passes

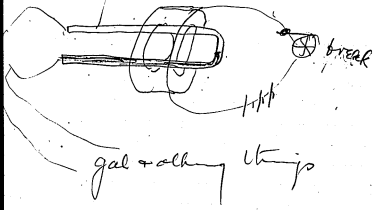
---

Pass a loop of two metals like a thermo thru a strong Magnetic gap & use various instruments to note any phenomena other than Elec

Observer with Microscope

built like a Thermometer
only larger filled different
liquid — pass rays
Coils around

Thermo wire + another metal



Perhaps with certain Crystals after subjection to def kinds of Energy which do not give light) may give other rays

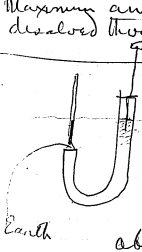
Make W Mo Cr U + other metal Crystals by fusion the same as my I made Tungstate Ca alloy with traces of impurities Lead Mn Bi Etc

some of these subjected to def rays when laid on photo plate interposing black paper may give image of all genera Cracks of metal _

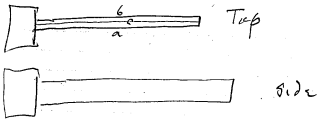
Suppose had 2 gratings one fixed the other could be vibrated with a beam of light on both the one that vibrated could be made to interfere & dull the light without moving .000001 of inch or one beam on Thermo & use galvanom

Crystalize fluorescing & phosc crystals under powerful Electric Stresses & see if it increases solubility - steady or alternating -

On best or those cylinders of Emg equal to 30 lbs strontia carb -
Wet with KOH, having maximum amount of colloids dissolved therein also other salts.



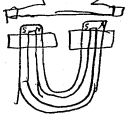
observe with telescope or micro



a is mica b mica & c mica forming a cell — put dif liquids in one side from the other different absorption of light on 2 sides heats & bends Cell — like a thermostat strip

Could connect end to Microfone tube audion or to a Mirror

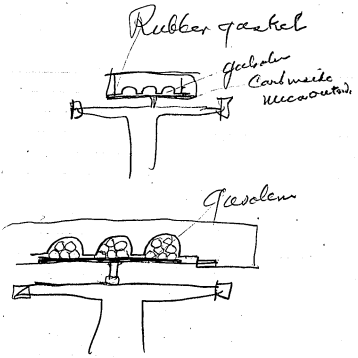
Rig up a small magnet with battery & key & bring poles close to audion bulb to deflection Cathode rays — & see if it alters the volume of a constant note being amplified by the audion



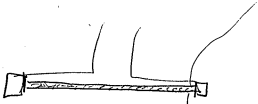
Two steel mags arranged to be a closed magnetic ckt — & used as a Receiving phone — already oriented & then work magnetic amplifier power

~~Discharge~~

Get large Crystals Clamp
one axis in steel Vise
Armor the 2 poles &
draw Violin bow over to
Vibrate see what form
Energy proceeds, also if
phos in dark or photo
by rays passing thru
Crystal which Vibrating



Acousticon with gasoline



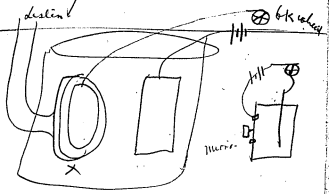
2 dia-
1/32 apart

Earth

filled full of very electrical
Excitable Oxalate of Calcium
or other Easily Excitable
powders -)

Determine by photog by
diff distances, X ray
fluorescence & % of
Resistance

In some of the best Emg
Cylinders make fresh &
add 5% Silicate Soda -



Plating Solution, see if can
hear the whirs of metallic
ions strike diaphm X

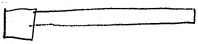
also use Micro connected
to diaphm & Audion -
Try plating Copper 1st
Try both Anode & Cathode

Mixture of melted Shellac + tetrachloronaphthalene when first poured becomes solid & semi transparent after being cold for several hours it turns yellow + entirely changes its nature. The tetrach crystalizes out notwithstanding the shellac is solid cold or brittle as well as strong. Dinitrobenzol & also Naphthalene does same thing. Energy must be given off in what form?

Make some precipitated sulfides that will not oxidize & make Emg Cylinders Telemeters, Grammeters,

Fred Ott make split (2) pieces faces with Palladium 1/32 width face each for Emg

Quartz



foil each side, bow it it should
bend and waves Try other
Crystals

With chemical papers recording
Can make it accumulative by
very slow moving of recording
Cylinder & connecting very
slow sending

Also sendinto a very small
Storage bat + deriv them thru
Valve mounted say 300 Gallin
& Commutating to heat

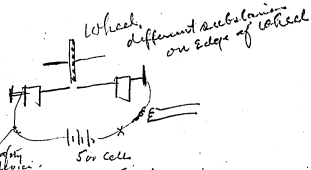
Smoke coming from a
dish insulated & Electrifying
P + N see if alter
Filling of the smoke for
Rain

Take a freshly loaded Nickel
bat time put in Ni Nitr Sulfate
very low density plates at
24 hours wash thoroughly
& put in test cell for detect

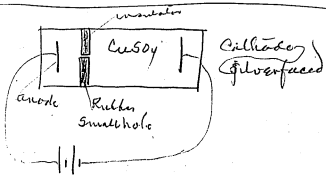
Best wireless phone detect
$\frac{1}{100}$ millionth of an ampere

A Pos or Neg electrified rod
of Rubber, glass etc
brought near an Audion
& made shown vary the volume
of a note being amplified—

Hold X ray or Radium over
pen of Eng & move it see if
it affects Volume of sound coming
in Note



See if hear in telephone, think a vibrator should be put in at X



See where + shape of deposit stunts.

to take care static in line
use Carborundum across line,
to discharge static or reverse waves
without blowing direct waves
= set up an artificial ckt Capy Imp

Sensitiveness of Best Head Phones

60	Vibs sec	620 millionths of a Volt
120	"	290
180	"	170
300	"	60
420	"	17
540	"	8
660		3
780		1
900		0.6

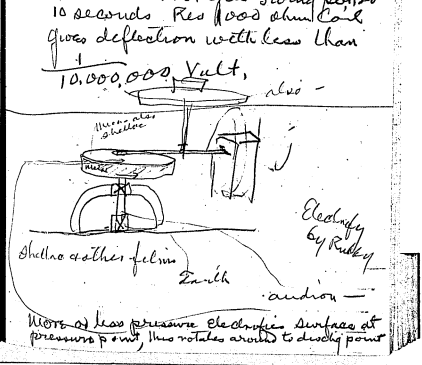
800 Vibs sec 1 millionth of a Volt

Limits Audibility of Telephone
diaphragm
amplitude is
6.3×10^{-10} CM
Encyclopd Brit under telephone

Enthoven $\frac{1}{100}$ of 200 gives deflection sufficient for observing with $\frac{1}{10\,000}$th of a Volt

Most sensitive Relay allow $\frac{1}{1000}$ of Volt if rapid $\frac{1}{200}$th Volt

Sensitive Mirror Galv swing period 10 seconds Res 1000 ohm Coil gives deflection with less than $\frac{1}{10,000,000}$ Volt,



Mass of less pressure electrifies surface at pressure point, thus rotates around to electric point

So far best cylinders for Emg
"Obmion"

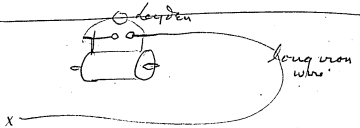
10 –

	on box	
$CaWO_3$	30	
Al hydrox	30	
Mg "	30 — flakes	
Zn "	26	
Ca ferrey	28	
Hed HgO	22	
Calcined MgO	26	
Mg Thorate	30 — smooth, small cracks	
Sr Oxalate	38 — Cracks shrinks	
Ca Arsenate	26 — Crumbles	
Ca Oxalate	32	
Ca Chromate	20	
Black Stannous Ox	28 @ 30 Cracks	
Sr Borate	28	
Al Chrom	24 Crax	
Cu Ox	32	
Ca Silicate	34 Enormous KOH works even in eccentric	
Sr Antimonate	20	
Sr Arsenate	20	
Ca Oxalate	500 at	26
Sr Carb	"	32
Sr Oxalate	750	32 goes [illegible]

Icebergs coming down to ground
temp aught to give sound on
Hydrophones by breaks formed by
Melting – These should be heard

If Bullet fired ahead should
hear it strike berg in fog
silence, if hear use Sealephone

Investigate Scintillations
further



see if get xyz at X 300 ft long wire

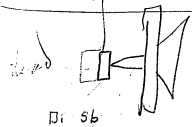
Fluorescence & heat is due to
strain in crystals. hence
electric, Magnetic heat &
sudden quench. Mechanical
vibration of crystals collisions
cannot now polar or fluorescence
sight by other rays or
Waves plus ultraviolet
after 12 hours in dead
dark room

Buy thin plates of fluorescing or phosphorescing material arranged so the ray passes thru many plates ~~[illegible]~~ Say first plate is of one material that phosphoresces or fluoresces to one part of the ray. The next plate should be of a different material which is sensitive to the ray passing thru the first plate then begins giving more light & so on with many plates each of a different kind until all of the rays are absorbed by this means the total light given off by the compound plates would be vastly increased

If light is used it can be reflected so the back of not the plates will give light desired to the observer

June 12th 1919

I wonder if 2 sources of Monochromatic light could be arranged to give beats & these beats arranged to give sub beats & so on thus bring the rate of vibration down to effect instruments. —



Di Sb

Audion, contacts pressed inwardly so as not to break out. using the elasticity of the diaphragm

1 a Bismuth field mag
+ high velocity cutting
wire would the Current
(if any) generated by the
opposite of that from an
iron field mag
Might give xyz instead of Elec

Alternating Current
passed thru Crystals
to press, would it give
light.

Try for chem paper
recording Leucoaniline —

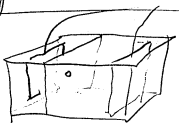
Bismuth rod in helix
powerful alternating
current – see if any
phenom. at end of rod
with Crystal & various
instruments – phos &
fluorescing Crystals,
or fluorescing stuff shewing
is diminished in brightness

Oxide Tin expands
11 times less than Sulphur
glass 8 times less than S
How about Selenium –
deposited Electrically
from Naselenite

Helix in front of slit of
Spectroscope helix powerfully
energized gives light,
Iron Obstacles & Interrupt
Wallace see if any effect on
lines, Coulombs & intermittent
Current
Also no helix but X ray
Radium etc stimulus

Don't forget the very long
iron wire magnet, also
the various sections 1"
iron bars wound to
make a very long magnet
It may have a time of
chg & dischg so as to
act as a resonator for
3@8 sec for propeller
of sub - capacity with capacity

Films of all kinds on glass that Conduct such as Arsenides Selenides Sulphides, Tellurides see how affected by all kinds of rays - *



005 hole in insulator partition

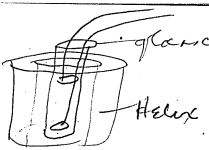
Cuprolumy Zns - Cathode

Silver etc / see if deflected

+ nature of + shape of

deposit if made dysymmetrical

by Light, heat etc

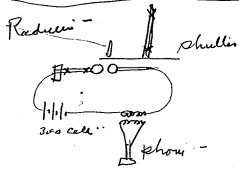


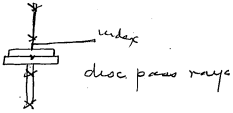
Cathode & anode -

Helix energizing by powerful
Alternating Current —
Def Liquids & poles -
Use X-Y-Z instruments Etc
One cell 4" long another
3 ft long

Get a Sensitive Pudwin
Electroscope —

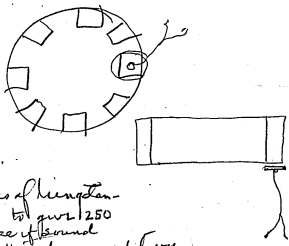
Be sure test Electrified Goods effect when heat near conductors —





Put 2 audions bucking
Each other so no current
pass thru then try X, Y, Z

Put crystals in non soluble
liquids, subject liquid to
strong sound waves
or elec stress like Condenser



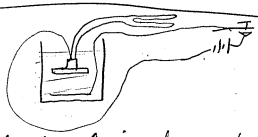
Chunks of tungsten-
Wheeler to give 1250
see to see if burned
due to alluminum gravel [illegible]
sheet from [illegible] - use Bell [illegible] + 3 audions
also

Insulating organic liquid –

water, with or without salts, 500 cells.

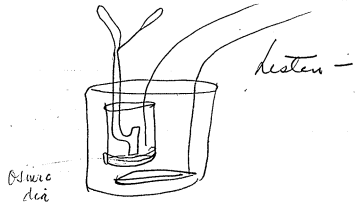
use high Voltage DC, & AC —

See if Can be made to diffuse into each other, might used one colored, also dilute with AC —



Osmotic diaphram – dialentor

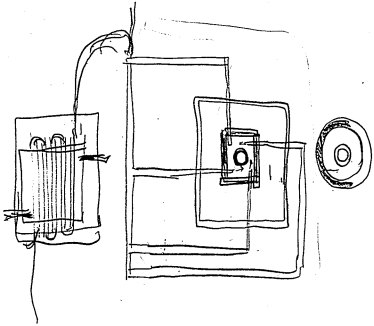
Pounds



When Emg ok. put in Tandem for amplification, + patent also with Edison Valve to straighten Current of course

Aluminum Electrode with film built up, transfer to water & see if it will act as a rectifier for weak Currents — Wireless also in Anhydrous Acetone Pyridine etc

In solutions of aluminate of soda ditto K
see if different metals can have Al_2O_3 films built on them.



$$30\overline{)240}^{\,8}$$

80